## (12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

## (19) World Intellectual Property Organization

International Bureau



## ) (BERT BUILDER IN BURIUR HEUT BOTH BERK BURU IN DIE BURU BURU TERED IN DIE BERT BURU BURU BURU BURU BURU DER

# (43) International Publication Date 3 June 2004 (03.06.2004)

#### **PCT**

# (10) International Publication Number WO 2004/047379 A3

(51) International Patent Classification<sup>7</sup>:

H04L 12/56

(21) International Application Number:

PCT/EP2003/012551

(22) International Filing Date:

11 November 2003 (11.11.2003)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data: TO2002A001009

20 November 2002 (20.11.2002) IT

- (71) Applicant (for all designated States except US): TELE-COM ITALIA S.P.A. [IT/IT]; Piazza Degli Affari, 2, I-20123 Milano (IT).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): BAIAMONTE, Valeria [IT/IT]; Via San Paolo, 45, I-10141 Torino (IT). FRAMCESCHINI, Daniele [IT/IT]; Telecom Italia s.p.a., Via G. Reiss Romoli, 274, I-10148 Torino (IT).
- (74) Agent: GIANNESI, Pier, Giovanni; Pirelli & C. S.p.A., Viale Sarca, 222, I-20126 Milano (IT).
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,

LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

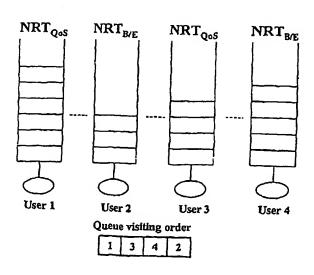
(84) Designated States (regional): ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

#### Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, Fl, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations

[Continued on next page]

(54) Title: METHOD, SYSTEM AND COMPUTER PROGRAM PRODUCT FOR MANAGING THE TRANSMISSION OF INFORMATION PACKETS IN A TELECOMMUNICATION NETWORK



(57) Abstract: To manage the transmission of information packets on channels of a telecommunications network, the packets are organised into user queues received in respective buffers, measuring the occupancy level of the buffers. The users are sorted into respective classes (RT, NRT) identified by the service mode requested. After determining the propagation conditions on the transmission channel respectively associated to said users, the priority in the transmission of the packets is determined, choosing the order in which the respective queues are visited as a function of: - a first level priority, linked to whether the users belong to the respective classes of service (RT, NRT), - a second level priority, linked to at least a parameter chosen between the level of occupancy of the respective buffer and the propagation conditions of the respective channel.

WO 2004/047379 A3 ||||||||||||

### WO 2004/047379 A3



of inventorship (Rule 4.17(iv)) for US only

#### Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report: 20 January 2005

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

In attonal Application No PCT/EP 03/12551

A. CLA	SSIFIC	ATION (	OF SUBJECT	MATTER
IPC	7	HO4L:	о <b>г subject</b> 12/56	

According to International Patent Classification (IPC) or to both national classification and IPC

#### B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols) IPC 7 - H04L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

#### EPO-Internal

C. DOCUM	ENTS CONSIDERED TO BE RELEVANT	
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Χ .	WO 01/76304 A (ERICSSON TELEFON AB L M) 11 October 2001 (2001-10-11) abstract; claims 1,4,5,7; figures 3a-5,10a-13	13-16, 31-34,38
Υ	page 18, line 11 - page 20, line 12 *Idem*	17-19, 35-37
Y	WO 00/62572 A (ERICSSON TELEFON AB L M) 19 October 2000 (2000-10-19) abstract; figures 2-4,7 page 13, line 3 - line 10 page 16, line 15 - page 17, line 2 page 18, line 3 - page 19, line 5; claim 3 -/	17-19, 35-37

Further documents are listed in the continuation of box C.	Patent family members are listed in annex.
*Special categories of cited documents:  *A* document defining the general state of the art which is not considered to be of particular relevance  *E* earlier document but published on or after the international filing date  *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)  *O* document referring to an oral disclosure, use, exhibition or other means  *P* document published prior to the international filing date but later than the priority date claimed	<ul> <li>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention.</li> <li>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone.</li> <li>"Y" document of particular relevance; the claimed Invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</li> <li>"&amp;" document member of the same patent family</li> </ul>
Date of the actual completion of the international search	Date of mailing of the International search report
22 November 2004	· 30/11/2004
Name and mailing address of the ISA  European Patent Office, P.B. 5818 Patentlaan 2	Authorized officer
NL. – 2280 HV Rijswijk Tel. (+31−70) 340−2040, Tx. 31 651 epo ni, Fax: (+31−70) 340−3016	Danielidis, S



PCT/EP 03/12551

		PCT/EP 03/12551
	ation) DOCUMENTS CONSIDERED TO BE RELEVANT	
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Х	WO 00/28760 A (NOKIA NETWORKS OY; RINNE MIKKO (FI); SALONEN JANNE (FI); AHMAVAARA KA) 18 May 2000 (2000-05-18) abstract; claims 1,2,8; figures 1,2 page 5, line 1 - line 20 page 10, line 30 - page 11, line 17	7-10, 25-28,38
X	DE 199 07 085 C (SIEMENS AG) 13 April 2000 (2000-04-13) column 3, line 1 - line 16 column 4, line 8 - line 31 column 2, line 62 - line 68	1,20
X	EP 1 154 665 A (LUCENT TECHNOLOGIES INC) 14 November 2001 (2001-11-14) abstract; claims 1,5; figures 1,4,5 column 4, line 52 - column 5, line 56 column 6, line 56 - column 7, line 5	1,20
X	WO 02/085061 A (QUALCOMM INC) 24 October 2002 (2002-10-24) page 19, paragraph 1070 page 22, paragraph 1080 - page 23, paragraph 1083	1,20
Α	US 5 914 950 A (LIN YU-CHUAN ET AL) 22 June 1999 (1999-06-22) column 8, line 33 - line 65 column 15, line 14 - line 36	1-38
Α	EP 0 999 674 A (LUCENT TECHNOLOGIES INC) 10 May 2000 (2000-05-10) abstract; figures 4,5 column 9, line 3 - line 56 column 2, line 3 - line 21	1-38
Α	WO 01/63851 A (NOKIA NETWORKS OY; KOLA TERO (FI); RAITOLA MIKA (FI); KOLEHMAINEN MIK) 30 August 2001 (2001-08-30) page 4, line 1 - line 30	27-30

# INTERNATIONAL SEARCH REPORT Information on patent family members

PCT/EP 03/12551

	atent document I in search report		Publication date		Patent family member(s)		Publication date
MO	0176304	Α	11-10-2001	US	6760303 [	B1	06-07-2004
WO 0170304	••	10 2004	AU	3965001		15-10-2001	
				WO	0176304 /		11-10-2001
WO	0062572	Α	19-10-2000	US	6507567 E		14-01-2003
				AU	772657 1		06-05-2004
				AU	4156900 /		14-11-2000
				CA	2369647 <i>l</i>		19-10-2000
				CN	1135887	В	21-01-2004
				EP	1169878 /	A1	09-01-2002
				JP	2002542687	Τ	10-12-2002
				WO	0062572	A1	19-10-2000
				TW	546975 I		11-08-2003
	0020760		18-05-2000		982417 /	 ^	07_DE 2000
WU	0028760	Α	10-03-2000	FI			07-05-2000
				AU	1273800 /		29-05-2000
				BR	9915079		17-07-2001
				CA	2348457		18-05-2000
			•	CN	1325601		05-12-2001
				ΕP	1125460		22-08-2001
				MO	0028760		18-05-2000
	_			JP	3369548		20-01-2003
	•			JP	2002530027	[ 	10-09-2002
DE	19907085	С	13-04-2000	DE	19907085 (	C1	13-04-2000
				EP	1030530		23-08-2000
	1154665	A	14-11-2001	DE	60014855		18-11-2004
LI	1104000	п	14 11. 5001	EP	1154665		14-11-2001
			JP	2002027562		25-01-2002	
							23 01-2002
WO 02085061	02085061	Α	24-10-2002	US	2002183066		05-12-2002
				EP	1378144		07-01-2004
				MO	02085061 /	A1	24-10-2002
US	5914950	A	22-06-1999	AU	7246698 /	— <b>——</b> — А	30-10-1998
	<del></del>	- •		CN	1141850		10-03-2004
				ΕP	0974237		26-01-2000
				ĴΡ	2001519123		16-10-2001
				TW	391099		21-05-2000
				WO	9845966		15-10-1998
				ÜS	5923650		13-07-1999
				ZA	9802973		13-10-1998
ED 0000674	0000674		10 OF 2000		6520400	 D 1	
EP 0999674	U3330/4	A	10-05-2000	US	6529499		04-03-2003
				CA	2279030		22-03-2000
				DE	69916747	_	03-06-2004
			EP	0999674		10-05-2000	
			JP	3492950		03-02-2004	
			JP	2000196664	A 	14-07-2000	
WO 0163851	0163851	Α	30-08-2001	AU	4058601	Α	03-09-2001
				BR	0108525	A	15-04-2003
				CN	1419766		21-05-2003
				WO	0163851		30-08-2001
				EΡ	1258117	A1	20-11-2002